AP Environmental Summer Assignment

Google Classroom Join Code: **k5bio2n**

Welcome to AP Environmental Science (APES)! This is an advanced multidisciplinary science course that combines concepts from biology, chemistry, geology, physics and the social sciences to investigate global environmental issues. We will discover how the earth's systems function together and how humans have affected our planet. We will also examine our personal consumption and learn ways to become more responsible global citizens in the face of serious environmental issues.

The purpose of this summer assignment is to introduce you to some of the major themes that will be covered in APES this academic year. We will draw upon the concepts introduced here throughout the course, so it's very important that you complete this work before the school year begins. The material will be included in assessments a few weeks into the start of the school year. I am looking forward to meeting and working with you!

Section 1: Chemistry Review

The APES exam assumes you have a basic background in chemistry and often includes chemical formulas in place of pesticide label names, etc. In addition, an in-depth knowledge of various biogeochemical cycles like the water, nitrogen and carbon cycles is expected at the chemical level. You can complete this section using Google searches.

1. Write the following chemical names that go with the symbols.

CO_2		CO		$C_6H_{12}O_6$		CH_4		H_2	
N_2		NO_2		NO_3		NH_3		NH_4	
O_2		O_3		P		PO_4^{3-}		S	
SO_2		SO_3		H_2SO_4		NaCl		Pb	
U^{235}		Rn		Hg		Cl		H_2O	

2. What is the pH scale? What does it measure?

3. What is the average pH of the following substances?

Blood	Rain	Stomach Acid	Lemon Juice	Bleach
River Water	Ocean Water	Acid Rain	Tap Water	Battery Acid

Section 2: Math Review

Congratulations! You will be able to use a calculator on the APES exam! This was not the case until 2020. Here is a list of the basic math skills you will NEED to know:

- How to calculate a percentage
- How to calculate demographics
- Rate of Change (Final-Initial/Initial=Rate of Change)
- Scientific Notation
- Dimensional Analysis (A.K.A. the Factor Label Method)
- Conversion Factors in the Metric System and Metric Prefixes. MEASURES (ENGLISH, METRIC, AND EQUIVALENTS)

Here are some sample math skills that you might encounter in APES. Please complete the following problems and don't forget to show all work and always include units. If you want, you can do these on a separate sheet of paper and either give it to me or include it as a PDF.

1. What is 10 million times 3,000 expressed in scientific notation?

Show work below	**Answer below**

2. A population of deer has 200 individuals. If the population suddenly drops by 15% in one year, how many will be lost? What will the new population be?

3. You purchased a new house with 2,500 square feet of living space. How many square meters is this?

4. Electricity costs 6 cents per kilowatt hour. In one month one home uses 1 megawatt of electricity. How much will the bill be?

5. If a city of 10,000 people experiences 200 births, 60 deaths, 10 immigrants and 30 emigrants in one year, what is the annual percentage growth rate?

Section 3: Environmental Legislation

Complete the table that organizes important information for the laws/treaties listed below. I did the first one for you. We will frequently refer back to this material over the course of the year. You can easily find the information through Google searches. Please include the following:

- Draft year and amendment year(s).
- Is it International or strictly for the U.S.
- Describe the function.
- What environmental issues are affected by this legislation?
- Agency/group responsible for regulation and enforcement (UN, EPA, DOI, etc.).

Name	Draft and Amendment	International or U.S.	Description	Issues affected	Agency
Clean Air Act	1963, 1977, 1990	U.S.	To monitor and control air pollutants such as SO_2,NO, O_3, Pb, VOCs and Hg. Meant to protect public welfare and health and to regulate emissions	Air pollution and human health	EPA

			of dangerous air pollutants.		
Clean Water Act					
Convention on International Trade of Endangered Species (CITES)					
Delaney Clause of the Food, Drug and Cosmetic Act					
Energy Policy Act					
Federal Food, Drug and Cosmetic Act (FDCA)					
Kyoto Protocol					
Lacey Act (1900)					

Magnuson Stevens Act					
Marine Mammal Protection Act					

Montreal Protocol					
National Environmental Policy Act (NEPA)					
Occupational Safety and Health Act (OSHA)					
Ocean Dumping Ban Act					
Pollution Prevention Act (PPA)					
Resource Conservation and Recovery Act (RCRA)					

Safe Drinking Water Act (SDWA)					
Soil and Water Act					
Surface Mining Control & Reclamation Act (SMCRA)					
Toxic Substance Control Act					

(TSCA)					
United Nations Framework Convention on Climate Change (UNFCC)					
Wilderness Act					

Section 4: Environmental Disasters

Over the last few centuries humans have irrevocably damaged the environment through the greed of big business and our own ignorance. Thankfully much of that is slowly changing. In order to exist sustainably on this planet we need to be aware of the environmental disasters that have occurred in the past and prepare to prevent future ones. The APES exam assumes that you will be familiar with these infamous case studies. Research all 11 case studies and write a two to three paragraph summary of **two** of them in the end section of this document. The summaries should be concise descriptions of the events and include a reason as to why that particular one piqued your interest. You will be able to find the information in Google searches and on YouTube.

- Chernobyl
- Kuwait Oil Fires
- Fukushima Dai-Ichi
- BP Oil Spill (A.K.A.) Deepwater Horizon Oil Spill
- Killer Smog of London
- E-Waste in Guiyu, China
- Bhopal, India Disaster
- Exxon Valdez Oil Spill
- 3 Mile Island
- Minamata Disease
- Love Canal

Section 5: Get outside!

If you pace yourself you should spend about an hour or so per week working on these assignments which will allow you ample free time to explore the outdoors. Take a hike, go for a run or a bike ride, go to places where there is as little evidence of civilization as possible! When you are out try to have some quiet time to reflect. Take pics and share them with me and we can talk about the places you went to over the summer when we begin classes in the fall.

Please email me with any questions. I will be checking my emails two or three times a week. I hope you have an amazing summer!

Warm regards,
Ms. de Mare (rhymes with car)
ademare@acsdny.org

Section 4

Environmental disaster paragraphs # 1

Environmental disaster paragraphs # 2

Section 5

Reflections: